

## REMARKS

The provisional election of Group I, claims 1-7 by telephone on May 27, 2008 is affirmed.

In paragraph 8 of the Office Action, claims 1-7 were rejected under 35 U.S.C. §102(a) or (e) as being anticipated by Willey et al. (Willey).

Reconsideration is requested.

Willey discloses a grease composition in which a high viscosity index-poly-alpha-olefin is a main component of the base oil and bismuth oxide is employed as an additive. However, Willey also discloses that the high viscosity index-polyalphaolefin base oil provides different performance characteristics as compared to conventional polyalphaolefin oils (Cf. paragraphs [0061] and [0068]). The high viscosity index-polyalphaolefin base oil has a kinematic viscosity of 150cSt at 110°C according to Willey and a kinematic viscosity of 1,500cSt at 40°C according to the attached ExxonMobil brochure. Thus, the polyalphaolefin base oil that is specified by amended claim 1 as having a kinematic viscosity of 20 to 200 mm<sup>2</sup>/s or cSt at 40°C is a distinctly different base oil from that specified by Willey.

The base oil of amended claim 1 is not the base oil of Willey and for this reason, the rejection under 35 U.S.C. §102(a) or (e) should be withdrawn.

In paragraph 16 of the Office Action, claims 1-3 and 3-7 were rejected under 35 U.S.C. §102(b) as being anticipated by Stuart Jr.

Reconsideration is requested.

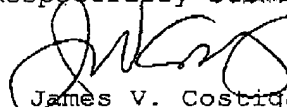
Stuart disclose a food grade grease composition which contains a bismuth carboxylate and/or bismuth metal powder as an additive. Claim 12 has been amended so that it now recites a inorganic bismuth compound. This language excludes the bismuth carboxylates and bismuth metal that is disclosed by Stuart Jr. as grease additives. For this reason, the amended claims define

an invention that is not disclosed or suggested by Stuart Jr. For these reason, it is requested that this ground of rejection be withdrawn.

New claims 22-26 individually point out preferred greases according to the invention that are recited in Markush form in amended claim 1. These claims are patentable over the prior art for the same reasons, that claim 1 is patentable.

An early and favorable action is earnestly solicited.

Respectfully submitted,



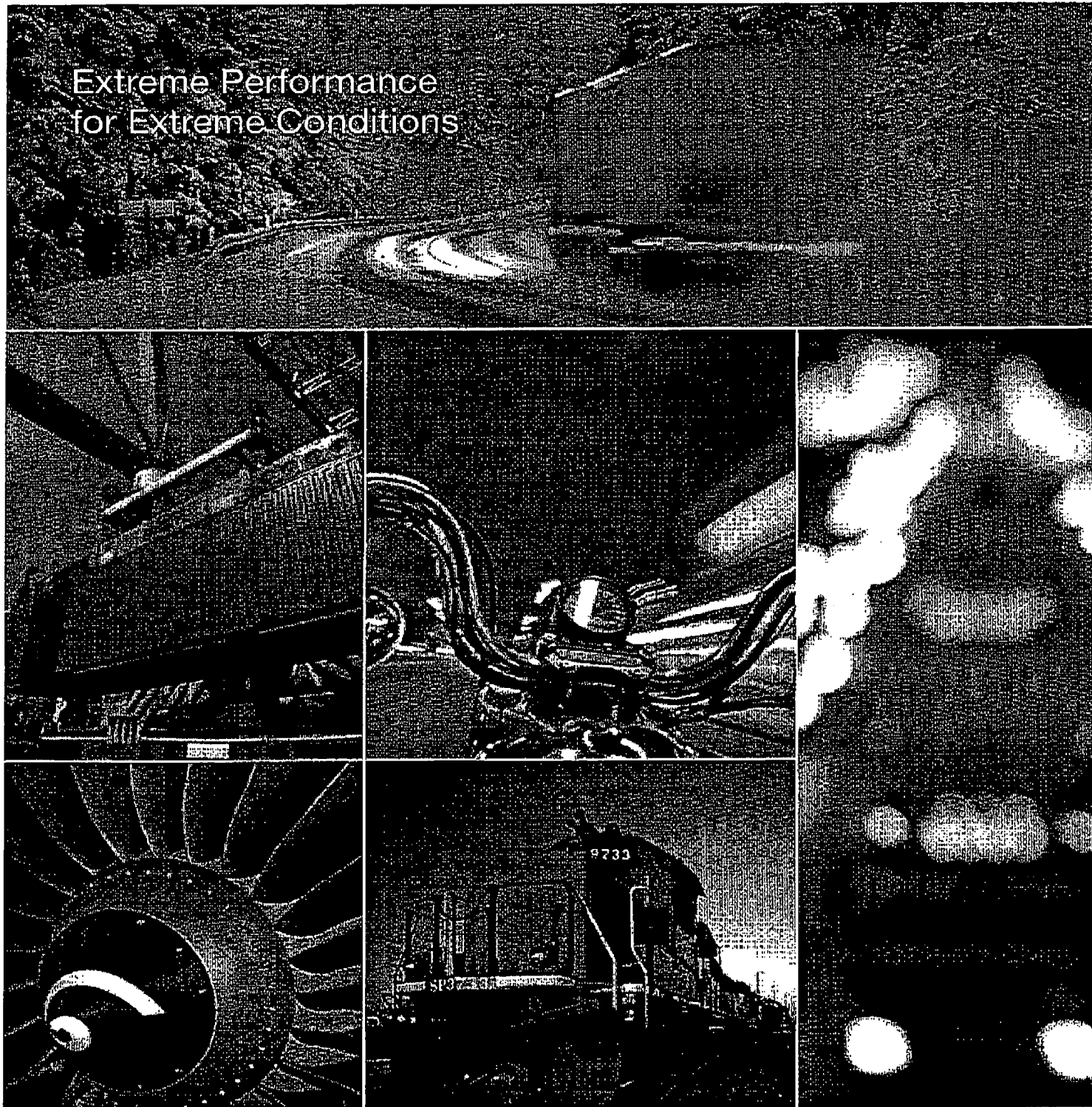
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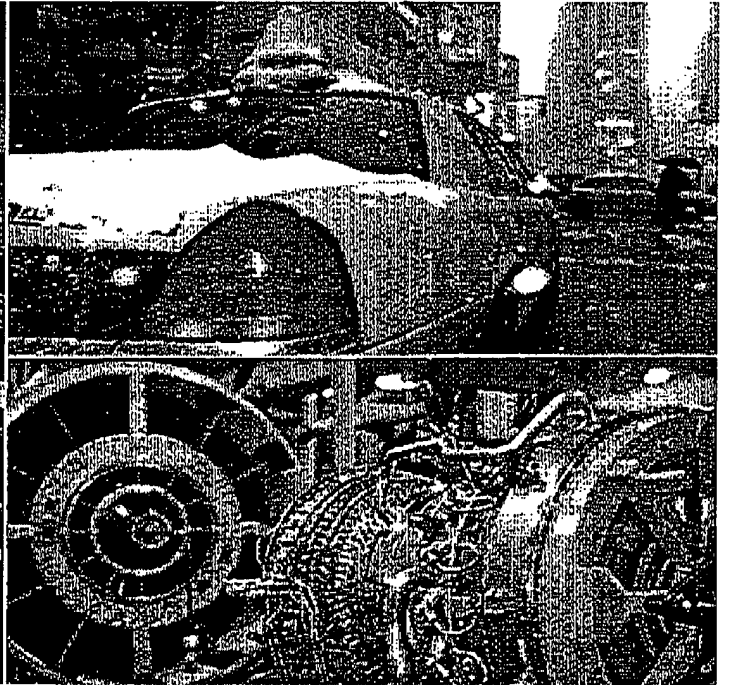
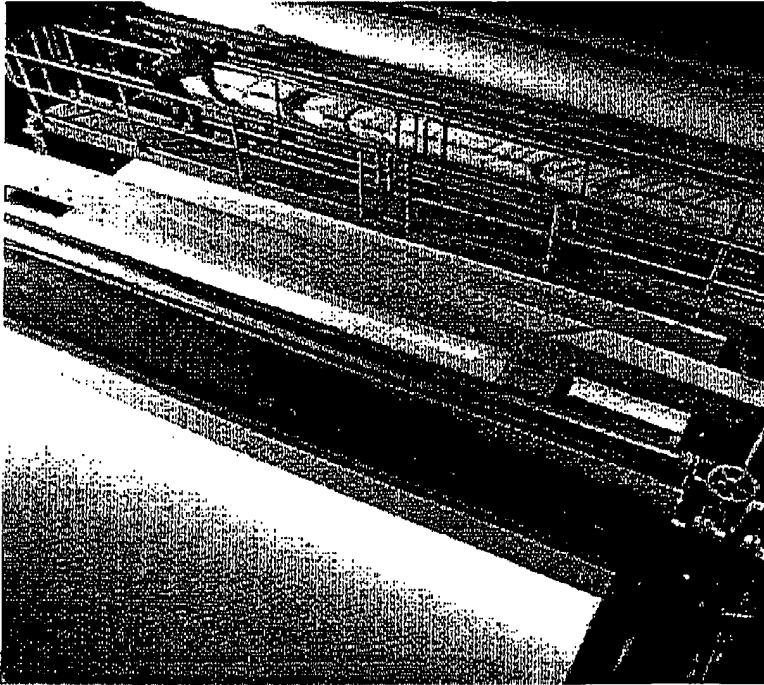
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**ExxonMobil**  
Chemical

## Synthetic Lubricant Basestocks

Extreme Performance  
for Extreme Conditions







# Your Source For Synthetic Solutions

Formulators have an extensive range of quality synthetic lubricant basestocks available from one reliable source – the Synthetics business of ExxonMobil Chemical. We're the world's leading producer of polyalphaolefins (PAO), alkylated naphthalene (AN) blendstocks and esters. Our product lines complement one another, giving lubricant manufacturers one convenient source for their basestock needs.

## Reliable, High-Quality, Global Supply Capability

We have multiple manufacturing locations in the United States and Europe, along with sales offices strategically located worldwide. ExxonMobil Chemical's synthetic lubricant basestocks are manufactured at facilities that are ISO 9002 certified. Our manufacturing processes provide excellent product consistency and product quality.

Our technical, sales, marketing and distribution networks enable us to provide outstanding customer service plus the logistical support and prompt delivery required by customers operating throughout the world.

## A Strong Commitment to Technology

Our Synthetics business includes technical experts that are able to understand and research synthetic lubricant basestocks and their applications. We can help you select the most cost-effective basestock for your end-use from our diverse product offering. With our extensive experience, we can also develop and manufacture products for specialty applications.

We have worked with customers to formulate lubricants with an extensive range of applications, including:

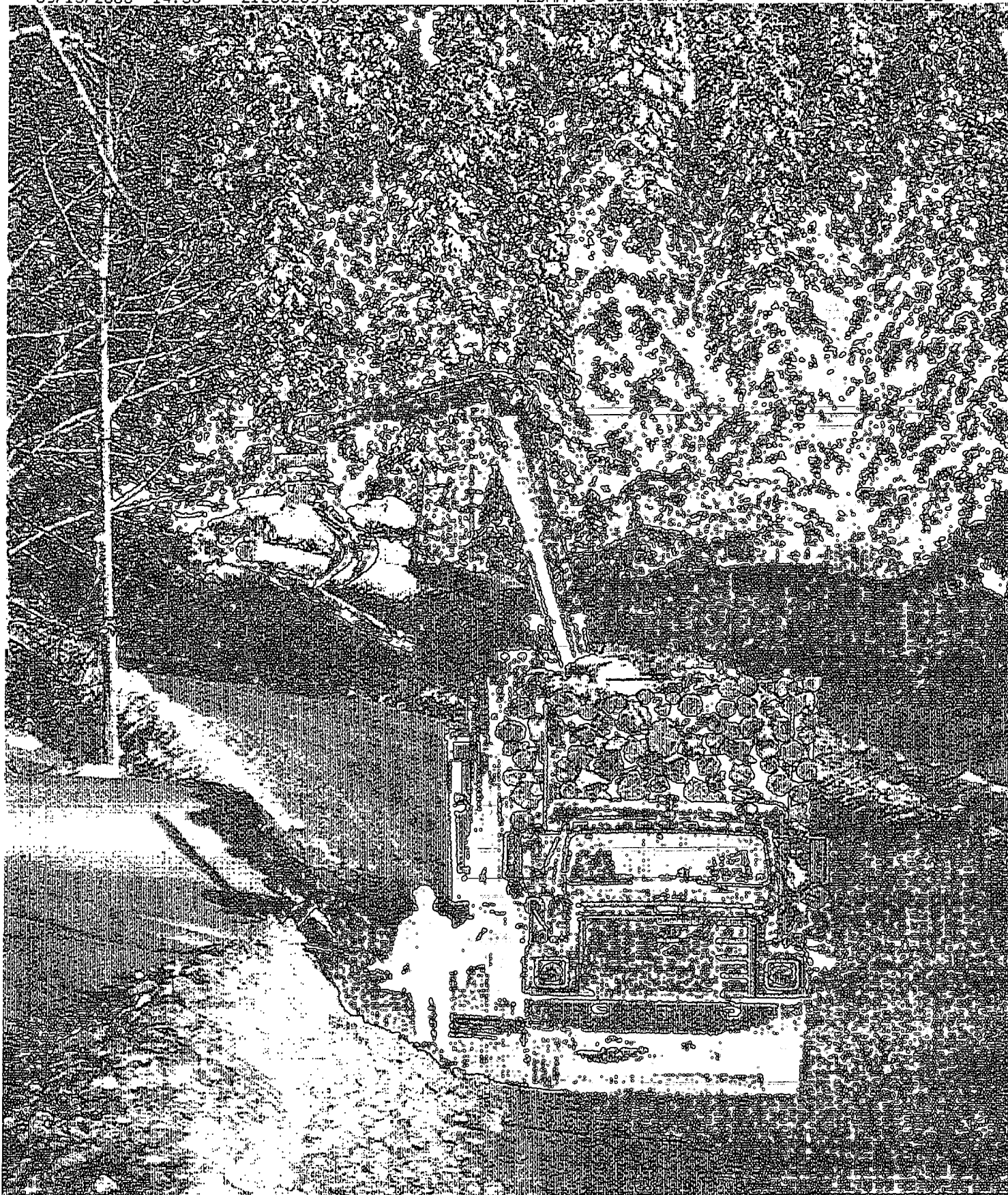
- *Automotive* – Passenger car motor oils, two-stroke engine oils, automotive gear oils and transmission fluids.
- *Industrial* – Compressor fluids, circulating oils, hydraulic fluids, gear oils, ovenchain oils and greases.

Our experience in balancing performance needs of basestocks in a broad range of applications can assist your company in meeting the changing needs of the market and the greater demands placed on lubricants today and in the future. By coupling our basestock experience with formulation expertise, we can help you develop superior lubricants that deliver a unique balance of properties.

## Knowledgeable Sales and Marketing

Our sales and marketing people know your industry as well as the challenges and opportunities you face. One-stop synthetics shopping at ExxonMobil Chemical can deliver added convenience. You can choose from our SpectraSyn™ low and high viscosity PAO, SpectraSyn Plus™ advanced low viscosity PAO, SpectraSyn Ultra™ high viscosity index PAO, Synessio™ AN blendstocks and Esterex™ synthetic esters. Combine our broad product slate with extensive formulation experience and you have the industry's most comprehensive portfolio of synthetic solutions. See the tables for an overview of our product range, and consult your ExxonMobil Chemical Synthetics sales representative about your particular applications. You can also visit our Web site for product information and specifications on our entire line at [www.exxonmobil synthetics.com](http://www.exxonmobil synthetics.com).

*Extreme conditions demand more from lubricants. Our researchers continue to develop synthetic solutions to help formulators meet these challenges.*





# SpectraSyn™

## Polyalphaolefins (PAO)

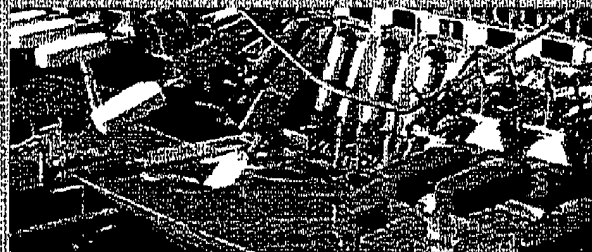
Meet your performance requirements with our broad slate of SpectraSyn™ PAO products. Find the high-purity PAO basestocks you need in one convenient source — from low viscosity to high viscosity. Our synthetic PAO basestocks provide outstanding lubrication for such applications as passenger car engine oils, driveline lubricants, industrial machinery and heavy-duty truck engines.

|                 | SG@<br>15.6/<br>15.8°C | KVG<br>100°C<br>cSt | KVG<br>40°C<br>cSt | KVG<br>-40°C<br>cSt | VI  | Pour<br>Pt., °C | CCS@<br>A/B<br>cP | Nonok<br>Volatility<br>wt. % | Flash Pt.<br>(COC), °C |
|-----------------|------------------------|---------------------|--------------------|---------------------|-----|-----------------|-------------------|------------------------------|------------------------|
| SpectraSyn™ 2   | 0.798                  | 17                  | 5                  | 252                 | —   | -68             | —                 | —                            | 157                    |
| SpectraSyn™ 2B  | 0.799                  | 18                  | 5                  | —                   | —   | -52             | —                 | —                            | 157                    |
| SpectraSyn™ 2C  | 0.798                  | 20                  | 6.4                | —                   | —   | -57             | —                 | —                            | 150                    |
| SpectraSyn™ 4   | 0.820                  | 21                  | 19                 | 2900                | 126 | -63             | 3,420 A           | —                            | 220                    |
| SpectraSyn™ 5   | 0.824                  | 51                  | 25                 | 4,920               | 138 | -57             | 2,420 B           | 6.8                          | 240                    |
| SpectraSyn™ 6   | 0.827                  | 51.5                | 31                 | 7,800               | 138 | -57             | 2,260 B           | 8.4                          | 245                    |
| SpectraSyn™ 8   | 0.833                  | 80                  | 48                 | 19,000              | 139 | -48             | 4,800 B           | 4                            | 260                    |
| SpectraSyn™ 10  | 0.835                  | 100                 | 65                 | 39,000              | 137 | -45             | 6,840 B           | 3.2                          | 268                    |
| SpectraSyn™ 40  | 0.850                  | 39                  | 396                | —                   | 147 | -36             | —                 | —                            | 281                    |
| SpectraSyn™ 100 | 0.853                  | 100                 | 1,249              | —                   | 170 | -30             | —                 | —                            | 283                    |

A = 35°C

B = 60°C

The high-speed equipment that keeps ice cream treats moving to market can benefit from high-performance synthetic lubricants.



# SpectraSyn Plus™

## Advanced Polyalphaolefins (PAO)

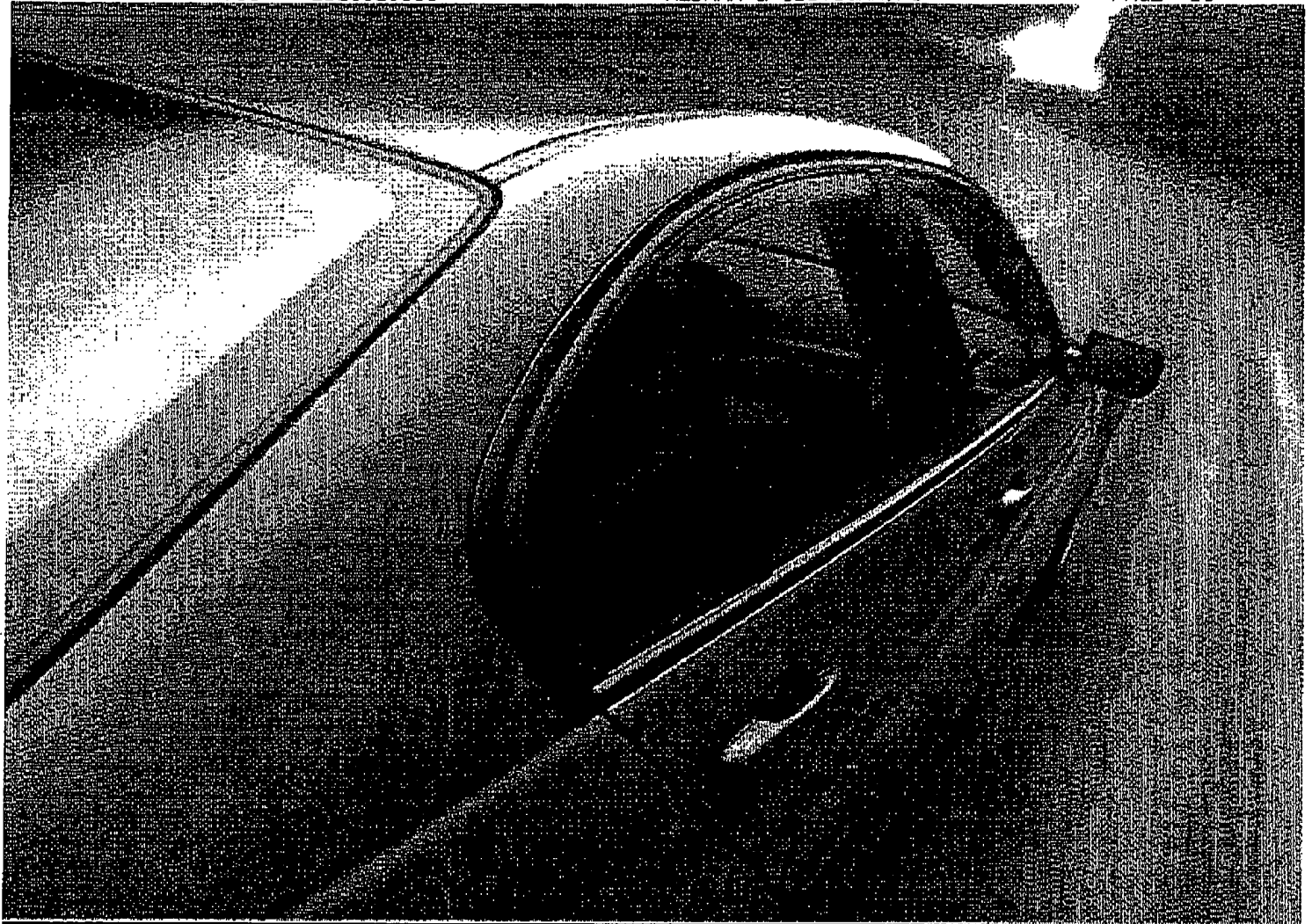
Whether your challenge is formulating a low engine oil or next-generation lubricant, success starts with choosing the right basestock. SpectraSyn Plus™ fluids are the advanced polyalphaolefins (PAO) basestock that provides formulators new flexibility to create high-performance lubricants. The SpectraSyn Plus™ PAO advantage is an innovative combination of low volatility and low-temperature fluidity. This one-of-a-kind combination provides significant performance advantages in applications where SpectraSyn Plus™ PAOs are the stand-alone basestock or when they're combined with other synthetic or mineral oil basestocks. In fact, the technology in SpectraSyn Plus™ PAOs fundamentally shifts the volatility and low-temperature fluidity profile of PAOs. The result for end-users can be performance advantages not possible with conventional PAOs.

|                      | SG@<br>15.6/<br>15.6°C | KV@<br>100°C<br>cSt | KV@<br>40°C<br>cSt | KV@<br>-40°C<br>cSt | VI  | Pour<br>Pt., °C | CCS@<br>-35°C<br>cP | Noack<br>Volatility<br>wt. % | Flash Pt.<br>(COC), °C |
|----------------------|------------------------|---------------------|--------------------|---------------------|-----|-----------------|---------------------|------------------------------|------------------------|
| SpectraSyn Plus™ 3.6 | 0.816                  | 3.6                 | 15.4               | 2,000               | 120 | -65             | 1050                | <17                          | 224                    |
| SpectraSyn Plus™ 4   | 0.820                  | 3.6                 | 17.2               | 2,400               | 126 | -60             | 1290                | <12                          | 228                    |
| SpectraSyn Plus™ 6   | 0.827                  | 5.9                 | 30.3               | 7,400               | 143 | -54             | 3800                | <6                           | 246                    |

*SpectraSyn Plus™ offers an unprecedented combination of low volatility and low-temperature fluidity with the low pour points expected in a PAO.*







**Exceptionally thick EHL and hydrodynamic films at high temperatures**

**Step-out visco-elasticity**

**Shear-stable viscosity at high-temperature, high-shear rate (HTHSR) conditions**

**High viscosity (150-1000 cSt @ 100°C)**

**Very low EHL traction**

**High VI (200-300+)**

**Low pour point (-33 to -18°C)**

**Low surface tension (30-31 mN/m)**

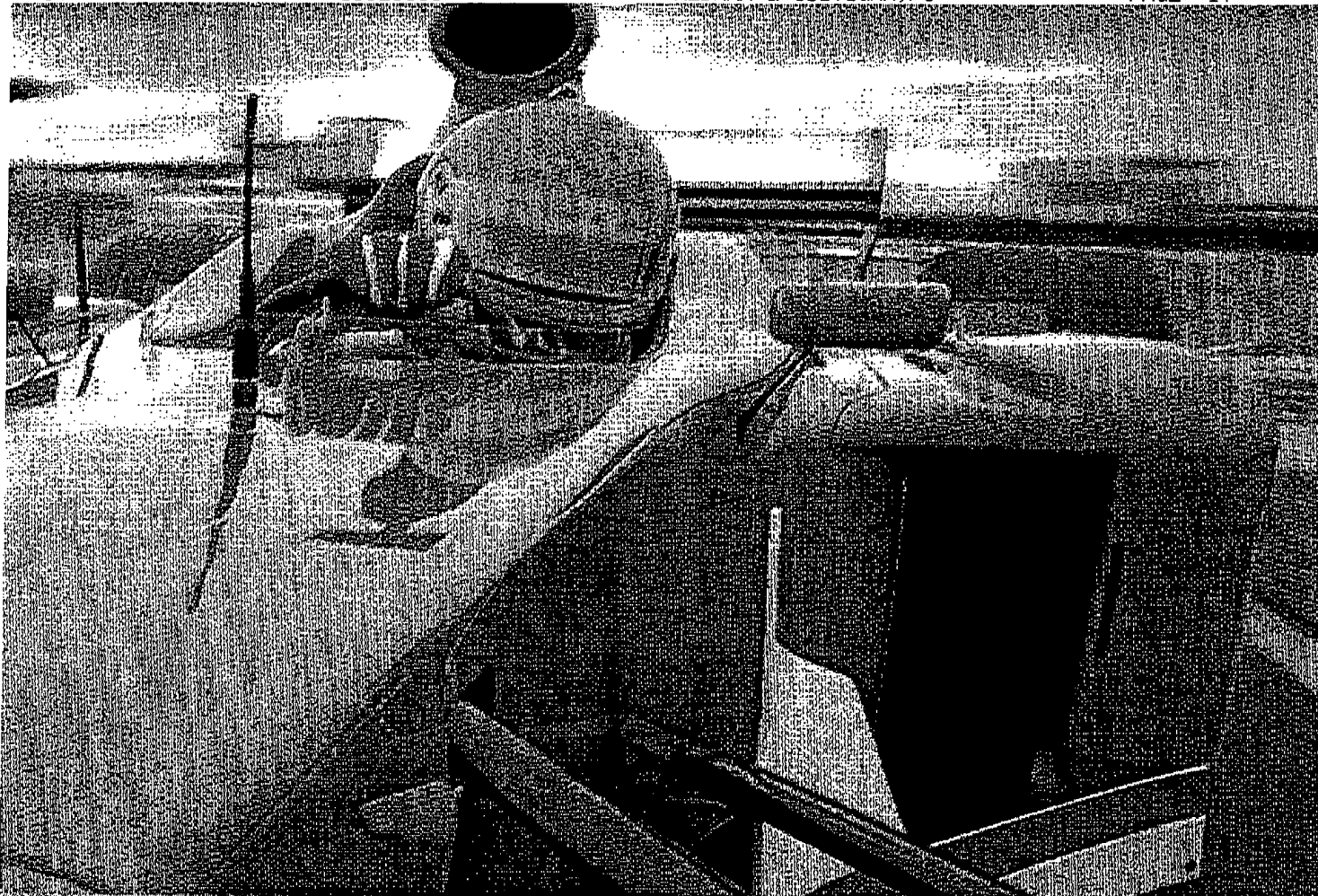
## **SpectraSyn Ultra**

### **High VI Polyalphaolefins (PAO)**

SpectraSyn Ultra™ High VI Polyalphaolefins (PAO) are the ultra-performance PAO that can help formulators meet the highest automotive and industrial lubricant standards. As a great complement to Groups I, II and III mineral oils and synthetic fluids such as SpectraSyn™ PAO, SpectraSyn Ultra™ High VI PAO products deliver very significant performance advantages across a full range of viscosities.

#### **Reduces Wear**

Key engine tests have shown significantly less wear from formulations that include SpectraSyn Ultra™ High VI PAO. Thanks to greater film thickness under elastohydrodynamic (EHL) conditions, SpectraSyn Ultra™ PAO basestocks help delay transition to boundary lubrication in valve-train contacts. This thicker lubricant film helps reduce friction, increase efficiency and reduce wear.

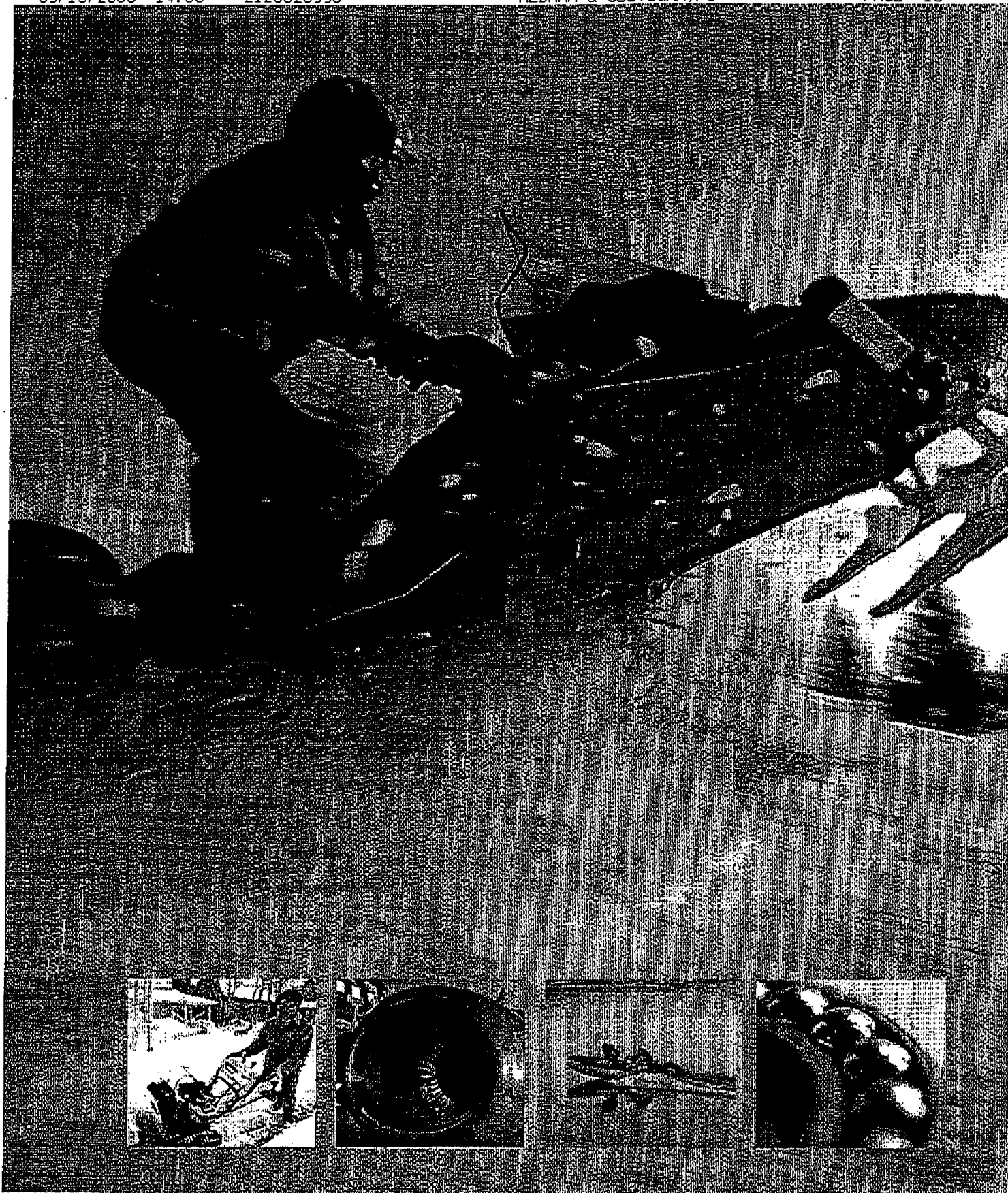


|                        | SG@<br>15.6/<br>15.6 °C | KV@<br>100°C<br>cSt | KV@<br>40°C<br>cSt | VI  | Pour<br>Pt., °C | Noack<br>Volatility<br>wt. % | Flash Pt.<br>(COC), °C |
|------------------------|-------------------------|---------------------|--------------------|-----|-----------------|------------------------------|------------------------|
| SpectraSyn Ultra™ 150  | 0.850                   | 150                 | 1,500              | 236 | -33             | <0.5                         | ≥265                   |
| SpectraSyn Ultra™ 300  | 0.852                   | 300                 | 3,000              | 235 | -27             | <0.5                         | ≥265                   |
| SpectraSyn Ultra™ 1000 | 0.855                   | 1,000               | 10,000             | 307 | -18             | <0.5                         | ≥265                   |

### Saves Energy

Automotive and industrial tests have demonstrated up to 1% in energy savings from lubricants utilizing SpectraSyn Ultra™ vs. competitive synthetic formulations. SpectraSyn Ultra™ fluids have low traction and resist low-temperature viscosity increase better than conventional high-viscosity thickeners.





# Esterex™

## Esters

ExxonMobil Chemical manufactures a broad range of organic esters for use in lubricant applications. Ranging from diester to polyesters, these materials feature performance properties such as:

- Good thermal and oxidative stability
- Low volatility
- Detergency and dispersancy
- Improved lubricity
- Biodegradability

Esterex™ Esters can be used as sole basestocks or in combination with other base fluids and can enable the lubricant to provide cost efficiencies such as improved equipment reliability, extended oil life and reduced energy consumption.

|                | SG @<br>15.6/<br>15.6°C | KV @<br>100°C<br>cSt | KV @<br>40°C<br>cSt | VI  | Pour<br>Pt., °C | Flash Pt.<br>(COC), °C | Color<br>ASTM | Water<br>ppm | TAN, mg<br>KOH/g | Biodeg<br>OECD301, F% |
|----------------|-------------------------|----------------------|---------------------|-----|-----------------|------------------------|---------------|--------------|------------------|-----------------------|
| Esterex™ A32   | 0.828                   | 2.8                  | 9.5                 | 149 | -65             | 207                    | <0.5          | <500         | <0.03            | 70.2                  |
| Esterex™ A34   | 0.827                   | 3.2                  | 12                  | 167 | -60             | 199                    | <0.5          | <1000        | <0.03            | 78.5                  |
| Esterex™ A41   | 0.821                   | 3.5                  | 14                  | 144 | -57             | 231                    | <0.5          | <500         | 0.01             | 76.5                  |
| Esterex™ A51   | 0.815                   | 5.4                  | 27                  | 136 | -57             | 247                    | <0.5          | <350         | 0.02             | 83.5                  |
| Esterex™ P25   | 0.941                   | 3.5                  | 18                  | 47  | -45             | 199                    | <0.5          | <1000        | <0.07            | —                     |
| Esterex™ P61   | 0.867                   | 5.4                  | 35                  | 62  | -42             | 224                    | <0.5          | <1000        | <0.07            | 79.4                  |
| Esterex™ P81   | 0.955                   | 8.3                  | 89                  | 52  | -33             | 265                    | <0.5          | <1000        | <0.14            | 84.5                  |
| Esterex™ TM101 | 0.990                   | 9.8                  | 89                  | 86  | -34             | 289                    | <0.5          | <1000        | 0.16             | <10                   |
| Esterex™ TM111 | 0.978                   | 11.9                 | 124                 | 81  | -33             | 274                    | <0.5          | <1000        | <0.16            | <10                   |
| Esterex™ NP244 | 0.945                   | 4.3                  | 19                  | 95  | -48             | 257                    | 0.5           | <350         | 0.02             | 65.0                  |
| Esterex™ NP451 | 0.993                   | 5.0                  | 25                  | 130 | -60             | 255                    | <0.5          | <500         | 0.01             | 83.6                  |

A = Adipate, P = Phthalate, TM = Trimellitate, NP = Neopentyl

@ 20/20°C (a) OECD301B (b) Single sample or two sample average determinations



# Synesstic<sup>TM</sup>

## Alkylated Naphthalenes

Synesstic<sup>TM</sup> Alkylated Naphthalenes (AN) Blendstocks provide formulators with proven API category Group V base fluids to use in extending the performance of many automotive and industrial lubricants.

Available in high and low viscosity grades, Synesstic<sup>TM</sup> AN Blendstocks have step-out hydrolytic and thermo-oxidative stability to help formulators improve the performance of mineral oil and PAO-based lubricants. Excellent additive solubility and outstanding compatibility with seal materials also contribute to making Synesstic<sup>TM</sup> the right blend stock for lubricants in a variety of applications.

### Performance Benefits

- Step-out hydrolytic stability
- Outstanding thermal and oxidative stability
- Excellent additive solubility
- Compatible with a wide range of elastomers
- Non-emulsive properties

|                            | SG @<br>15.6/<br>15.6 °C | KV @<br>100 °C<br>cSt | KV @<br>40 °C<br>cSt | VI  | Pour<br>Pt., °C | Flash Pt.<br>(COC), °C | Color<br>ASTM | Water<br>ppm | TAN, mg<br>KOH/g |
|----------------------------|--------------------------|-----------------------|----------------------|-----|-----------------|------------------------|---------------|--------------|------------------|
| Synesstic <sup>TM</sup> 5  | 0.988                    | 27                    | 29                   | 74  | -35             | 222                    | < 5           | < 50         | < 0.05           |
| Synesstic <sup>TM</sup> 12 | 0.987                    | 122                   | 109                  | 105 | -30             | 258                    | < 10          | < 50         | < 0.05           |

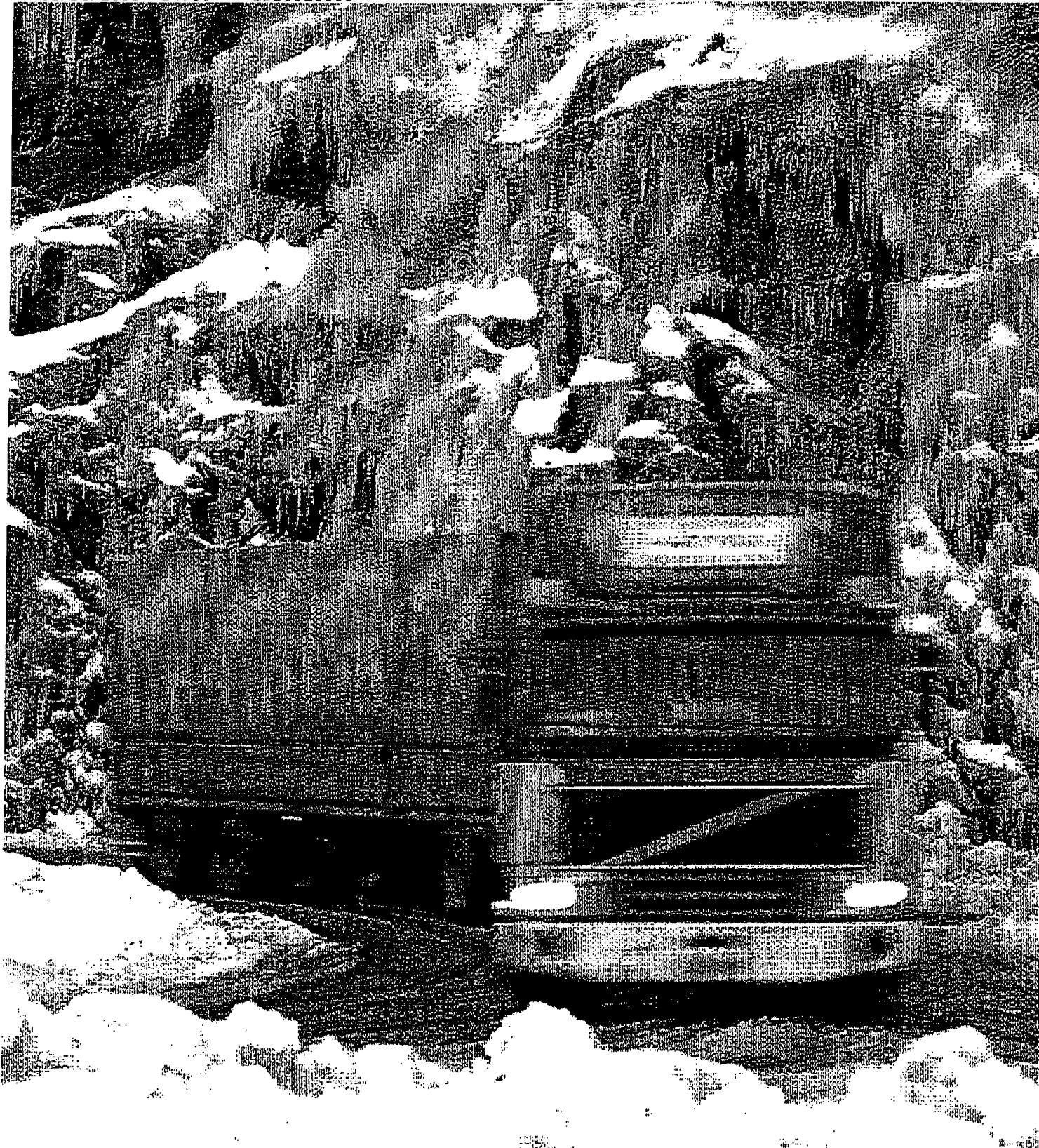
|  | Synesstic <sup>TM</sup> 5 | Synesstic <sup>TM</sup> 12 |
|--|---------------------------|----------------------------|
| Hydrolytic Stability, TAN Increase         | 0.02                      | 0.02                       |
| Thermal Stability, % KV Change             | 3.8                       | 4                          |
| Oxidative Stability, HDSC-IP @ 180 °C, min | > 120                     | > 120                      |



Synesstic<sup>TM</sup> AN  
Blendstocks – Blendstocks  
for extreme conditions







**To request more information, contact your sales representative  
or visit our Web site at [www.exxonmobilsynthetics.com](http://www.exxonmobilsynthetics.com)**

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